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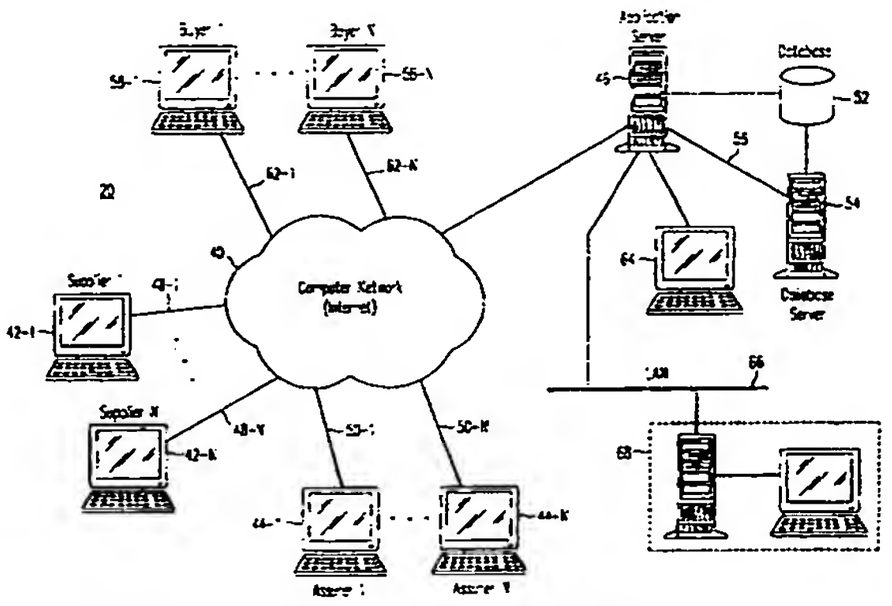
(54) Title: PROCUREMENT SYSTEM USING REVERSE AUCTION AND COMPUTER NETWORK TECHNOLOGIES IN CONJUNCTION WITH OPEN MARKET, QUALITY ASSURANCE AND ANONYMOUS BIDDER AND BUYER PROCESSES



(57) Abstract: A procurement system in which an auction process is used to obtain a product or service from one of a plurality of suppliers each connected over a computer network to the procurement system. One or more buyers submit requests for products or services to the procurement system to be purchased by the system. These products or services are tabulated and posted on the procurement system data base and are accessible to the plurality of suppliers connected to the computer network. The system maintains complete anonymity between the buyers and the suppliers. Notice is given to the plurality of suppliers that one or more auctions are to be conducted for items for purchase. Notice includes a starting time of the auction and an auction period. Any number of suppliers capable and willing to supply an item for purchase submit during the auction period bids at which the supplier agrees to supply the item to the purchaser. When the auction closes, one or more suppliers having the lowest bid and meeting the requirements of the buyer are the winning suppliers. Winning suppliers receive a purchase order for the items that the winning supplier has agreed to supply. Suppliers can supply the item directly to the buyer if the supplier is qualified to do so. Otherwise the supplier must submit the item to an assurer, which tests to assure that the item meets the buyer's requirements, after which, if successful, the assurer ships the item to the buyer.

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PROCUREMENT SYSTEM USING REVERSEE AUCTION IN CONJUNCTION WITH OPEN MARKET

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority from U.S. Provisional application entitled "Procurement System Using Reverse Auction And Computer Network Technologies In Conjunction With Open Market And Anonymous Bidder Processes" filed on Nov. 5, 1999, SN 60/163,885.

BACKGROUND

FIELD OF THE INVENTION

The present invention relates generally to buying and selling in a computer network environment and particularly to a reverse auction process used in buying and selling over a computer network.

DESCRIPTION OF THE RELATED ART

Current methods of conducting an auction over a computer network, such as the Internet, have several deficiencies. In one type of auction, known as a forward auction, the price for a product or service is bid up by buyers over a prescribed auction period at the close of which the highest bidder is the buyer of the product or service. The type of auction tends to favor the supplier (seller) and auctioneer because the process tends to make the buyer pay a higher price for the product or service in order to win the bid over the other potential buyers.

In another method of conducting an auction, the price of a product is decreased in a prescribed manner over a prescribed auction period based on the amount of time left until the auction closes or the total quantity of the product has been purchased. In this kind of auction the auction period is relatively short and usually involves a decreasing quantity of the product available for auctioning during the auctioning period. Furthermore, in the decreasing price auction, the bidders are the buyers and the pricing is not a function of the bidding process but rather relates to the time left in the auction period. The purpose of the decreasing price is to sell the remaining product before the auction period ends.

the Internet, potential suppliers of products must be carefully qualified, before they are allowed to sell their products. Once qualified, however, the supplier may still place products having poor quality up for auction. When buyers receive these poor quality products, they then discover the poor quality and either ship them back or ask for a refund. This latter activity raises the cost of managing the procurement system, upsets buyers and causes a general loss in confidence in the system. However, it is still desirable to have an open auction system in which any one at any time can be a supplier.

Thus, there is a need for a procurement system in which the pricing of products or services occurs by means of an auction process that favors both the buyer and the seller and in which anyone at any time can be a supplier.

BRIEF SUMMARY OF THE INVENTION

The present invention is directed towards meeting the above needs. A method in accordance with the present invention includes receiving a request from a buyer to procure the item, then giving notice to each of a plurality of suppliers that an auction is to be conducted to determine the supplier of the requested item. The suppliers have access via a computer network to a computer system that conducts the auction. Next, the auction is conducted over a period of time in which some or all of the plurality of suppliers submit bids at which each agrees to supply the requested item. At the end of the auction, a lowest bid is determined and whether the lowest bid is below a target price. If there is a bid below the target price, the lowest bidder is declared to be the auction winner and the winner is so informed. Lastly, the item is procured from the auction winner.

An advantage of the current invention is that the pricing process, by means of a reverse auction, favors both the seller and the buyer. The buyer's advantage is that the buyer receives a product or service at a lower cost because of the reverse auction process and the supplier's advantage is that the supplier is guaranteed the sale if the supplier was the lowest bidder and below the target price set by the buyer.

Another advantage is that anyone, at any time, can become a supplier; no qualification is required. Because product quality is assured by the assurer, the procurement system of the present invention substantially guarantees that the buyer will not receive sub-standard product and buyer returns and refunds will be substantially eliminated.

of each other. Requesting items to be supplied by an auction winner and bidding for the items is completely anonymous. This assures a completely un-biased procurement system and prevents market alterations based upon the identity of either the buyer or the seller.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features, aspects and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings where:

FIG. 1 shows a computer network system over which auctions in accordance with the present invention are conducted;

FIG. 2 shows a typical configuration of a computer of the computer network;

FIG. 3 shows a block diagram of a system in accordance with one embodiment of the present invention;

FIGs. 4A and 4B show the several data records of the present invention;

FIGs. 5A, 5B and 5C show a flow chart of the procurement process in accordance with the present invention;

FIGs. 6A and 6C show a flow chart of the auction process in accordance with the present invention;

FIG. 7 shows a flow chart of the buyer's activities in the procurement system; and

FIG. 8 shows a flow chart of the assurers activities in the procurement system.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 shows a computer network system 20 over which procurement by auction operates in accordance with the present invention. A computer network 40, such as the Internet, connects one or more client computer systems 42, 44, 58 to a server system 46. Each client computer system 42, 44, 58 has independent access over lines 48, 50, 62, respectively, to the server system 46 and is equipped with a presentation software program, such as a browser possibly with plug-ins or applets (not shown), for interacting with the user. Server system 46 has a processing system (not shown) for running an application and a database management system

the database management system runs on a separate database server system 54 to which the server running the application is connected over link 56.

In the case of the present invention, potential suppliers of products or services use client computers systems 42-1 to 42-N to connect via the Internet 40 to the server system 46. A plurality of buyers of products or services also have client computer systems 58-1 to 58-N with a network connection 62-1 to 62-N to the server system. Finally, a plurality of assurers 44-1 to 44-N connect to the computer network over links 50-1 to 50-N. The assurers perform a quality check on products or services that are procured through the system. Administration of the server system occurs through one ore more local terminals 64. Alternatively, the server system 46 connects to a local area network 66 to which is connected one or more administration computers 68.

FIG. 2 shows a typical configuration of a server system 70, such as the applications server or database server system shown in FIG. 1. Server system 70 includes a processor 72 and memory 74 connected by means of a system bus 76. Memory 74 holds programs that are run by the server system 70. If the server system 70 connects to a storage system 52, it has a disk I/O interface 78 that connects to the system bus 76. Additionally, the server system 70 has a communications interface 78 that connects the server system 70 to the computer network 40 (in FIG. 1) and a keyboard and monitor interface 80 for a terminal attached to the server system 70.

FIG. 3 shows a block diagram of a system 80 in accordance with one embodiment of the present invention. In FIG. 3, the system 80 includes a master database 82 and a management system 84, which includes a database management system such as Oracle 8.0 or equivalent. The master database 82 stores data records as required by the application. The system 80 further includes several identifiable program modules which interact with the management system, the suppliers, the buyers and the assurers.

A buyer/supplier-information program 88 processes a supplier's application information as submitted by each supplier as a condition of gaining access to the system and stores the information in the master database 82 by making suitable requests to the management system 84. Supplier application information includes the name and contact information of the supplier and supplier profile information This program also processes and stores a buyer's application information in the master database, which includes buyer's name, contact information, profile

and suppliers is shown in dr1 of FIG. 4.

A program 86 for receiving orders from a buyer receives this order information over the computer network and stores the information in the master database 82 by means of the management system 84. A buyer's order includes a description of the product, the quantity of the product desired and a maximum price above which the buyer will not purchase the requested item. Associated with the buyer's request for a product or service, in some cases, are special requirements that apply to the product or service. For a product, one common special requirement is whether the product supplied must be in working condition or whether the product can be used or new. Other special product requirements are whether partial quantities can be bid on, the revision level of the product, the model number and the appearance of the product, priority, a supplier certification requirement, and length of the auction and its close time. This information is shown in record dr4 of FIG. 4B.

Another program module, an auction module 90, is dedicated to conducting one or more auctions over the computer network 40 shown in FIG. 1. This program receives, via the communications program 92, supplier bids that specify the price quantity and condition of the product the supplier is will to supply to satisfy the buyer's order. A bid confirmation is returned to suppliers that submit bids and a lower bid notice is returned to suppliers that have been outbid by another supplier. Additionally, the auction program module posts documents that are accessible over the computer network to the suppliers and buyers and list item orders submitted by the buyers and the auction status relating to each item, i.e., the time and date of an upcoming auction and the results of a completed auction for the item. Suppliers view these order lists to determine what is available for auction and the auction status of the items in an active auction.

Also included in the procurement system 80 is a communications program 92 that is responsible for electronically communicating auction information directly to individual suppliers that are engaged in an open auction. This program communicates supplier bids, bid confirmations and a lower bid notices either through an email application or secure Web pages over the computer network.

A computer network interface program 94 connects the computer network to the system of FIG. 3. In one embodiment, the computer network interface program 94 is a Web site program when the computer network is the Internet. This Web site program serves to deliver supplier information forms, to accept data entered into the supplier information forms, to supply

entered into bidding forms and to send electronic communications to the suppliers when those communications are in a form that can be transmitted over the Internet. The interface program provides a Web page or portal for the buyer as well. This Web page presents a purchase request form to the buyer and captures purchase request information entered into the form. Captured purchase request information is transferred to the processing program 86.

An administration interface program 96 connects to the management system 84. The administration interface program 96 permits the system administrator to enter data into the system and to receive administration reports from the system. Information accessed by the administrator includes a number of items as listed in dr3 of FIG. 4A. These include a target price for a product or service to be auctioned, an auction close time and data, a drop ship requirement, a priority or urgency indicator, special and generic product requirements, the quantity needed by the buyer and whether partial quantities are acceptable to the buyer, the order status of a buyer's order, a record of the supplier's profile, whether the supplier is approved to bid, the buyer's credit limit the buyer's credit information and payment method and the fee percentage and fee structure indicator. The target price is the maximum price that the procurement system is willing to pay to acquire the item ordered by the buyer in order to maintain a certain mark-up percentage. As an example, if the buyer submits an order for an item with a maximum price of $115.00 and the procurement system operates on a 15% mark-up, then the target price is set at $100.00. The fee structure indicator determines whether the procurement system passes any savings in purchasing the item on to the buyer. Continuing with the previous example, if the procurement system obtains the item for less than the target price, say at $80.00, but wishes to keep the same mark-up (15%), then the fee structure indicator determines whether the procurement system either keeps the difference ($23.00) between the buyer's maximum price ($115.00) and the marked-up actual purchase price ($92.00) or passes the difference back to the buyer.

Finally, procurement system 80 includes an assurance interface 100 that allows an assurer to access the database management system to request and supply information to the system. The assurer is a testing and quality assurance agency which tests products before they are shipped to the buyer to determine if the product meets the requirements placed on the product by the buyer in the auction process. Product that fail to meet the buyers requirements are shipped back to the supplier and products that pass the testing are shipped to the buyer. The

procurement system to expand to include a large number of suppliers, more than could be included without the assurance function, and it assures that buyers get what they bargain for.

FIGs. 4A and 4B illustrate the several data records of the present invention. Data record dr1 includes application information of the buyer and suppliers. This information is acquired from documents presented to buyers and suppliers that connect to the system over the Internet via the network interface 94 and includes the name, contact information and profile information for the suppliers and buyers and additionally, information regarding buyer's form of payment and desired mode of shipment. Data record dr2 includes interactive auction data that is sent to or received from suppliers connected to the system and engaged in an active auction. This interactive information includes a supplier bid, a bid confirmation, and a lower bid notice if a bid lower than the supplier's bid was received. Data record dr3 includes administrative information used to manage the operation of the system. In addition to the administrative information of dr3 the administration also has access to the information of dr1, dr2 and dr4, as shown in FIG. 3.

Data record dr4 includes information that relates to the buyer placing an order to the system. This information includes the product and product description, the quantity and maximum price the buyer is willing to pay for the item, the auction length and close time, the priority or urgency of the order, whether only certified suppliers are allowed to bid on the items in an order, whether suppliers can bid on partial quantities, the ship-to address, the preferred carrier, and additional shipping information. Notice to the buyer of auction results and buyer actions needed informs the buyer of the status of an item that has been subject to a completed auction and any actions the buyer may consider in response to the auction of the item. Such actions include the re-posting of the item for a new auction, canceling of an item that did not sell, the number supplied and not supplied if partials were allowed and the number canceled if the buyer canceled part of his order.

Additionally regarding buyer order information, the dr4 record indicates an order status of an ordered item and includes information about the items supplied and not supplied, items canceled and items that are shipped and the location of the order within the process flow of the procurement system. If an item is shipped to the buyer and the buyer discovers that the item is defective, the buyer uses the return number request to obtain a return number for sending the item back to the procurement system or the assurer.

procurement system. Win notice indicates to the supplier that that supplier is the auction winning and purchase order gives the supplier access to a purchase order issued to the winning supplier. The supplier is asked to provide the ship date, the waybill number, packing slip and serial numbers of the items to be shipped either to the buyer (if drop-shipment is permitted) or to the assurer. If a supplier has supplied a defective product, the notification of defective goods gives notice to the supplier of that fact and requests a return authorization number.

Lastly, data record dr5 includes information needed by the assurer to carry out assurer functions. This record includes the order status, product specifications and shipping information about the products that have sold through the auction process along with failure information of products that fail the tests carried out by the assurer.

FIGs. 5A and 5B show a flow chart of the procurement process in accordance with the present invention. As a first step 140, an order for a product or service from the buyer is submitted to the system via program 86 and dr4, in FIG. 3, and stored in a purchase requisition list. These items are then placed on an auction list in step 142. The auction list is made available for browsing over the computer network by the auction program 30. Next, in step 144, the procurement system starts an auction to obtain the requested products or services on the auction list from suppliers willing to provide items on the list. Any supplier is free to submit bids to supply items on the auction list by means of program 92 and dr2, in FIG. 3. At the end of the auction in step 146, one or more suppliers have been selected in the auction process to provide a particular item on the auction list. In step 148, the buyer is notified of the auction results via the buyer Web page or portal by program 92 and dr2 in FIG. 3. If all of the items of the original purchase requisition have a supplier, as determined in step 150, then, in step 156, purchase orders are created from the original purchase requisition or buyer-submitted purchase order and the auction results in step 148. If not all of the items requested in the purchase requisition have a supplier, then, as determined in step 152, the buyer can re-post some or all of the items for auction or cancel the requisition in step 154 via dr4 and program 86 in FIG. 3.

Returning to step 156 in FIG. 5B, the next step is to create a purchase order. If the buyer has supplied a purchase order as determined in step 158 then the purchase order is already available and can be submitted, in step 162 via dr4 to the program 86 in FIG. 3. Otherwise, in step 160, if the buyer submits a purchase requisition, the purchase order must be created by the system. Regardless of how the buyer submits his request, the procurement system creates and

auction process to supply the item(s) requested by the buyer.

Next, in step 164, the system determines whether the supplier is qualified to drop ship to the buyer. If so, a way bill is created in step 176 and verified in step 178 and the purchase order is shown as received and closed in step 182.

If the supplier is not qualified to drop ship the order to the buyer, then the items must be shipped to the assurer. Items in transit are monitored, in step 166, to determine whether an item is delayed in transit to the assurer. Once the products reach the assurer, the assurer performs tests, in step 168, on the product to make sure it meets the requirements of the buyer including any special requirements. If the products pass the test as determined in step 172, then the products are shipped from the assurer to the buyer and the purchase order is closed in step 182. If the products fail the test as determined in step 170, then the products are shipped back to the supplier in step 174. In this way, the buyer does not receive products that do not meet the buyer's specifications in the auction or products that have sub-standard quality. This makes the procurement process more efficient and easier to manage and allows the system to handle more buyers and suppliers than without the assurance function.

FIGs. 6A and 6B show a flow chart for an auction process in accordance with the present invention from the viewpoint of a particular supplier. According to FIG. 6, a potential supplier first signs on to the procurement system via the network interface and provides supplier profile information to the system in step 190, by means of dr1 and program 88 in FIG. 3. As a condition of the supplier's participating in an auction, the supplier must agree to accept the terms and conditions of submitting bids and the supplier's responsibilities under a purchase order if one is issued to the supplier, as shown in step 192.

Next, in step 194, the supplier views the items up for auction and the auction data pertaining to the items over the computer network as provided by program 90 in FIG. 3. Auction data includes auction information and product information. Auction data includes the start time of the auction, the quantity needed, when the auction closes, and whether the target price has been reached. Product information includes the part number, the working condition and any specific product requirements.

For any item having an open auction, the supplier submits a bid to the procurement system over the computer network for a specific quantity of the product or service in the open

than the quantity needed.

While the supplier monitors the progress of the auction over the computer network in step 198, the auction module 90 in FIG.3 compares the supplier's bid with other bids received from other suppliers of the item being auctioned. If the auction period has not expired, as determined in step 200, and the supplier has not submitted the lowest bid as determined in step 202, the supplier receives notice, in step 204, by the communications program 92 and dr2 (in FIG. 3) that a bid lower than the supplier's was submitted.

The supplier at this point can decide, as shown in step 206, to submit a new bid or drop out of the auction, in step 208. If the auction period has still not expired, and the supplier submits a new bid, as determined in step 206, the above process is repeated. Any number of bids can be submitted by the supplier before the auction period expires.

In one version of the present invention, if suppliers submit bids during a predetermined short period of time prior to the end of the auction, as determined in step 210, the auction period is extended, in step 212, until there is no bid submitted during the short predetermined time period prior to the end of the auction, at which point the auction period is ended. In one case, the short time period is approximately 10 minutes but any size time period can be chosen by the procurement system. The purpose of extending the auction period until a period of inactivity occurs is to insure that the auction does not prematurely terminate an active bidding process.

If the auction period is expired and no supplier submitted a bid meeting any special requirements associated with item under auction, the buyer can request via dr4 and program 86 (in FIG. 3) that a new auction be scheduled by the procurement system. Prior to a new auction some or all of the special requirements or the target price may be altered at the request of the buyer.

If the auction period has expired and the supplier has submitted the lowest bid as determined in step 214, the system then compares the lowest bid against the target price in step 216. If a single supplier supplies the full amount of the quantity requested by the buyer, then the winner supplier is notified. If the buyer has indicated that partial quantities are allowed and the winning supplier has bid to supply less than the full amount, the supplier that bid the next lowest bid to the winning bid that is also below the target price is chosen to fill the remaining quantity. If that supplier has bid to supply less than the remaining quantity the supplier that bid the next

there are multiple suppliers as determined in step 218, then each is notified of their winning bid. In step 224 a purchase order is issued to each of the winning suppliers, either by email or by an URL in an email that asks the supplier to visit the Web page provided by the network interface module to the suppliers. In the latter case, the purchase order is posted on the procurement system and the winning supplier can download a copy of the purchase order in step 226. Otherwise, the purchase order is sent to the winning supplier by electronic mail.

Once received, the winning supplier reviews the purchase order for correctness in step 226, and if all is acceptable, the winning supplier adds shipping information and a waybill number or carrier tracking number to the purchase order for items to be shipped against the purchase order in step 228. The checked and filled-in purchase order is then sent back to the server system. An electronic packing slip or a link to the packing slip also may be included in the shipping information provided. Additionally, serial numbers for each item to be shipped are provided by the winning supplier in step 230.

FIG. 7 shows a flow chart of the buyer's activities in the procurement system. In step 250 the system determines whether or not to create a new part number in the master database. If the part number does not, exist in step 252, the part number is created. Next, in step 254, the buyer selects a part number, either one existing or one just created. The buyer enters the auction parameters, in step 258 for the part just selected. Auction parameters include the condition of the item (new, used or working), whether partials are allowed, the priority of the request, whether only certified suppliers are desired, the close time of the auction, the auction duration, the quantity of the item, the buyer's maximum price, the last price the buyer paid, and the item specifications. The above process is repeated, as determined in step 260, until all items requested by the buyer are specified.

Once all items are specified, the item list is posted to the auction program, in step 262. Next, a ship-to address is filled in by the buyer, in step 264, and, in step 266, an authorization is submitted. This authorization indicates to the system that buyer is authorized to submit an order. Finally, the order is submitted to the procurement system in step 268 and, in step 270, the buyer monitors the status of the auction on a client computer system connected to the computer network.

FIG. 8 shows a flow chart of the assurers activities in the procurement system. In step 280, the assurer receives parts that were shipped by the supplier to the assurer. The assurer, in

284, a determination is made as to whether the parts pass the assurer's testing. If so, the parts are shipped to the address specified by the Buyer, in step 286. If the parts do not pass the assurer's testing, then, in step 288, the procurement system is notified of the failure, and in step 290, the procurement system notifies the supplier that the parts are being returned. In step 300, the assurer then ships the failed parts back to the supplier.

Although the present invention has been described in considerable detail with reference to certain preferred versions thereof, other versions are possible. Therefore, the spirit and scope of the appended claims should not be limited to the description of the preferred versions contained herein.

What is claimed is:

1. A method, using a computer system connected to a computer network, for conducting an auction, comprising the steps of:

(a) posting, on the computer system, an item requested by a buyer, by making available a document that displays information identifying the item, an auction period and a start time at which the auction is open to receive bids from potential suppliers over the computer network;

(i) upon the auction being opened for the item,

(b) receiving and processing bids submitted for the item by potential suppliers;

(c) determining a lowest current bid from the bids submitted for the item;

(d) notifying potential suppliers that have submitted bids of the lowest current bid;

(e) receiving additional bids from any potential suppliers who desire to supply the requested item at a lower price than the lowest current bid, in response to step (d); and

(ii) at the end of the auction period,

(f) determining whether the lowest bid is at or below a target price; and

(g) if the lowest bid is at or below the target price, declaring the supplier who submitted the lowest bid to be the auction winner and notifying the auction winner thereof.

2. A method, using a computer system connected to a computer network, for conducting an auction as recited in claim 1, further comprising the step of

sending a request to the buyer who requested the item to re-request that the item be procured by the system, if the lowest bid is not at or below the target price.

3. A method, using a computer system connected to a computer network, for conducting an auction as recited in claim 1, wherein the computer network is the Internet.

4. A method, using a computer, of procuring an item for a buyer as recited in claim 1,

wherein there is anonymity between and among the buyers and the suppliers.

5. A method, using a computer system connected to a computer network, for conducting an auction as recited in claim 1, wherein the posting includes a picture and description of the item requested by the buyer.

6. A method, using a computer system connected to a computer network, for conducting an auction as recited in claim 1,

wherein the posting includes a specified quantity of the item requested by the buyer;

wherein the auction winner bids to supply the specified quantity of the item requested; and

wherein the auction winner has a guaranteed buyer for the specified quantity of the item requested.

7. A method, using a computer system connected to a computer network, for conducting an auction as recited in claim 1,

wherein the posting includes a specified quantity of the item requested by the buyer; and

wherein the auction winner bids to supply less than the specified quantity; and

wherein the supplier bidding the next lowest bid to the lowest bid supplies a some or all of the specified quantity of the item not supplied by the auction winner.

8. A method, using a computer, for procuring an item for a buyer, comprising the steps of:

(a) receiving a request from a buyer to procure the item;

(b) giving notice to each of a plurality of suppliers that an auction is to be conducted to determine the supplier of the requested item, the suppliers having access via a computer network to a computer system that conducts the auction;

suppliers submit bids at which each agrees to supply the requested item;

(d) at the end of the auction, determining a lowest bid submitted and whether the lowest bid is below a target price;

(e) if there is a bid below the target price, declaring the lowest bidder to be the auction winner and so informing the winner; and

(f) procuring the item from the auction winner.

9. A method, using a computer, of procuring an item for a buyer as recited in claim 8,

wherein there is a plurality of buyers; and

wherein there is anonymity between and among the buyers and the suppliers.

10. A method, using a computer, of procuring an item for a buyer as recited in claim 8, wherein the computer network is the Internet.

11. A method, using a computer, of procuring an item for a buyer as recited in claim 8,

wherein the step of procuring item from the auction winner includes issuing a purchase order to the auction winner.

12. A method, using a computer, of procuring an item for a buyer as recited in claim 8, wherein the step of conducting the auction includes the steps of:

notifying the suppliers of a start time and auction period for a bidding process;

subsequent to the start time, receiving bids from the plurality of suppliers over the computer network for the item requested;

communicating the receipt of a lower bid to the plurality of suppliers having a higher bid; and repeating the steps of receiving bids and communicating the lower bid until the auction period expires.

wherein the auction winner is certified to drop ship the item to the buyer; and

wherein the step of procuring the item includes delivering the item directly to the buyer from the supplier.

14. A method, using a computer, of procuring an item for a buyer as recited in claim 13, wherein the step of delivering the item to the buyer includes:

obtaining a packing slip from the computer system and waybill number from the supplier,

the waybill specifying the carrier for shipping the product to the buyer; and

verifying that the product was received by the buyer.

15. A method, using a computer, of procuring an item for a buyer as recited in claim 8,

wherein the auction winner is not certified to drop ship the item to the buyer;

wherein the buyer specifies a set of requirements that the item must meet; and

wherein the step of procuring the item includes:

delivering the item by the supplier to a quality assurer;

assuring by the quality assurer that the item meets the buyer's requirements; and

delivering the item to the buyer by the quality assurer.

16. A system connected to a computer network, the system for procuring an item for a buyer, the system comprising:

an application management system that includes:

a database management system operative to store and retrieve information from a database, and

database, and the application management system operative to store information in and retrieve item information from the database via the database management system;

a computer network interface program operative to establish a connection to the computer network, the connection permitting buyers and suppliers to access the system;

a buyer and supplier application program connected between the application management system and the network interface program and configured to receive and store buyer and supplier application information in the database, the buyer and supplier application information for determining whether a buyer or supplier has access to the system;

an order processing program connected between the application management system and the network interface program, for receiving the item order from a buyer connected to the computer network and tracking the item order through the system; and

an auction program connected to the application management system and configured to conduct an auction over the computer system to select, from among the plurality of suppliers, at least one supplier willing to sell the item at a price lower than the other suppliers.

17. A method, using a computer, of procuring by auction an item for a buyer, comprising the steps of:

(a) receiving a request from a buyer for the procurement of the item;

(b) posting the request on a server connected to a computer network, the server being accessible via the computer network to a plurality of suppliers;

(c) posting, in a document on the server, an auction period, and a start time of an auction for the item;

(d) opening the auction for the product or service at the start time;

(i) while the auction is open, (e) receiving bids from one or more of the plurality of suppliers over the computer network, each of the bidding suppliers being capable of supplying the requested item;

(f) communicating to each of the bidding suppliers that another supplier submitted a lower bid;

(h) closing the auction when the auction period expires;

(j) determining after the close of the auction whether the lowest bid is at or below the target price;

(ii) if the lowest bid is at or below the target price,

(k) declaring the lowest bidder to be a winner of the auction and notifying the auction winner thereof;

(l) procuring the requested item from the auction winner; and

(iii) if the bid is not below the target price,

(m) posting in a document on the server that there was no successful bid.

18. A method, using a computer, of procuring by auction an item for a buyer, as recited in claim 17, further comprising:

after step (g) and prior to step (h),

(p) determining whether any bids were received during a predetermined time prior to the end of the auction period;

(q) if any bids were received during the predetermined time prior to the end of the auction period, extending the auction period for an additional period of time; and

(r) if no bids were received during the predetermined time prior to the end of the auction period, continuing at step (h).

19. A method, using a computer, of procuring by auction an item for a buyer, as recited in claim 17, wherein the computer network is the Internet.

20. A method, using a computer, of procuring an item for a buyer as recited in claim 17,

wherein there are a plurality of buyers; and

wherein there is anonymity between and among the buyers and the suppliers.

21. A method, using a computer, of procuring by auction an item for a buyer, as recited in claim 17, wherein the step of procuring the requested product or service includes the step of purchasing the item from the supplier submitting the lowest bid.

22. A method, using a computer, of procuring by auction an item for a buyer, as recited in claim 21, wherein the step of purchasing the item from the supplier submitting the lowest bid includes issuing a purchase order to the supplier.

23. A method, using a computer, of procuring by auction an item for a buyer, as recited in claim 17, further comprising the step of (n) after step (m), continuing at step (c).

24. A method, using a computer, of procuring by auction an item for a buyer, as recited in claim 17, wherein the step of communicating the submission of the lowest bid is carried out by sending an email message over the computer network to one or more of the suppliers having a higher bid.

25. A method, using a computer, of procuring by auction an item for a buyer, as recited in claim 17,

wherein the step of notifying the auction winner of the winning bid is carried out by sending an email message over the computer network to the auction winner; and

wherein the email message communicating the winning bid includes a hyper text link to an electronic purchase order document for issuance to the auction winner.

26. A method, using a computer, of procuring by auction an item for a buyer, as recited in claim 25, wherein the electronic purchase order document is delivered by the server system to a client computer system over the computer network, the client computer system having a browser for viewing the document by accessing the link.

25,

wherein the supplier is certified to drop ship the item to the buyer; and

wherein the electronic purchase order includes:

a link to a packing slip to be attached to the shipment of a product by the winning bidder; and

a field for entering the waybill number into the electronic purchase order.

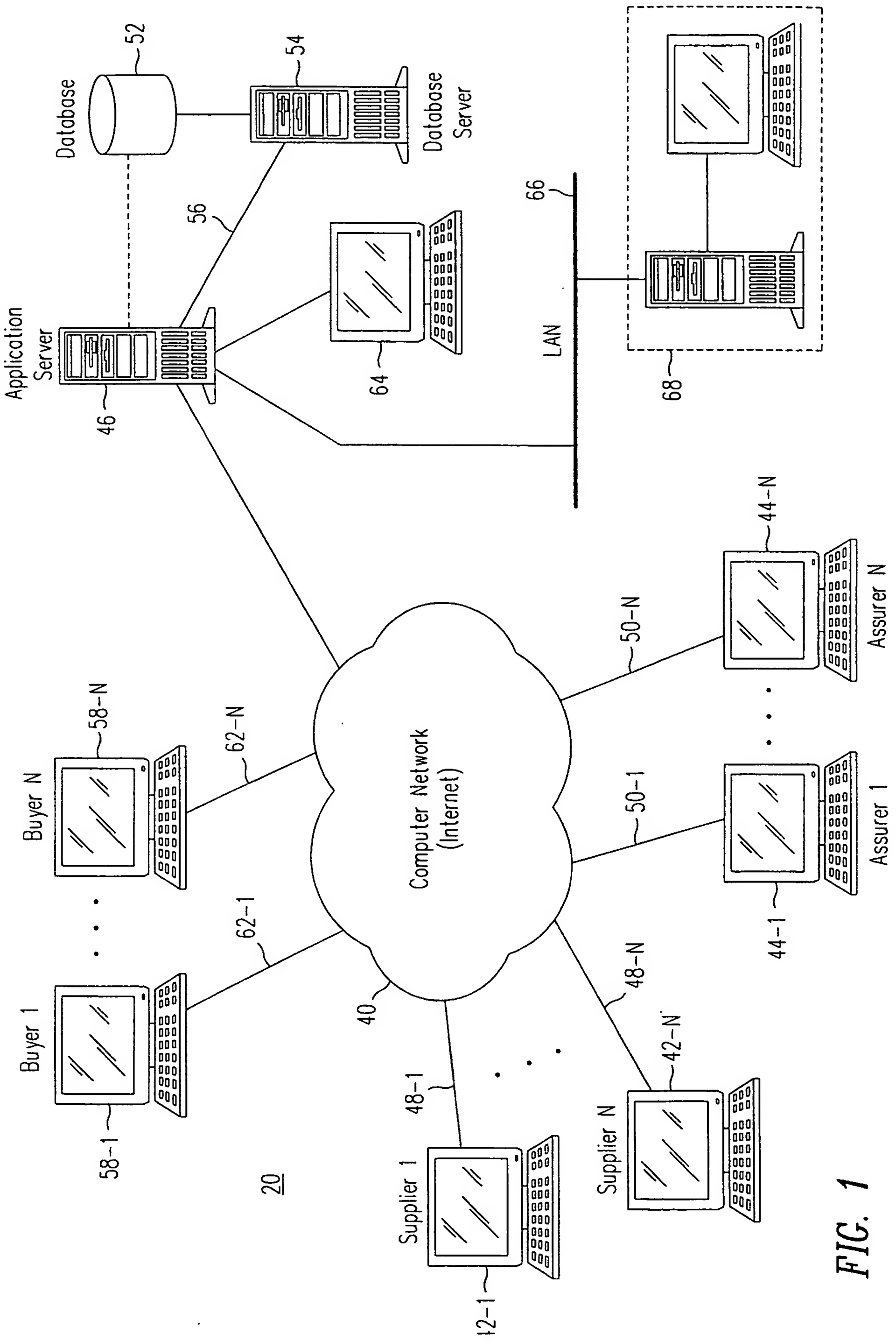
Database
52
Database Server
54
56
Application Server
46
64
66
LAN
68
Buyer N
58-N
62-N
Buyer 1
58-1
62-1
Computer Network (Internet)
40
50-N
50-1
Assurer N
44-N
Assurer 1
44-1
48-N
48-1
Supplier 1
42-1
Supplier N
42-N
20

FIG. 1

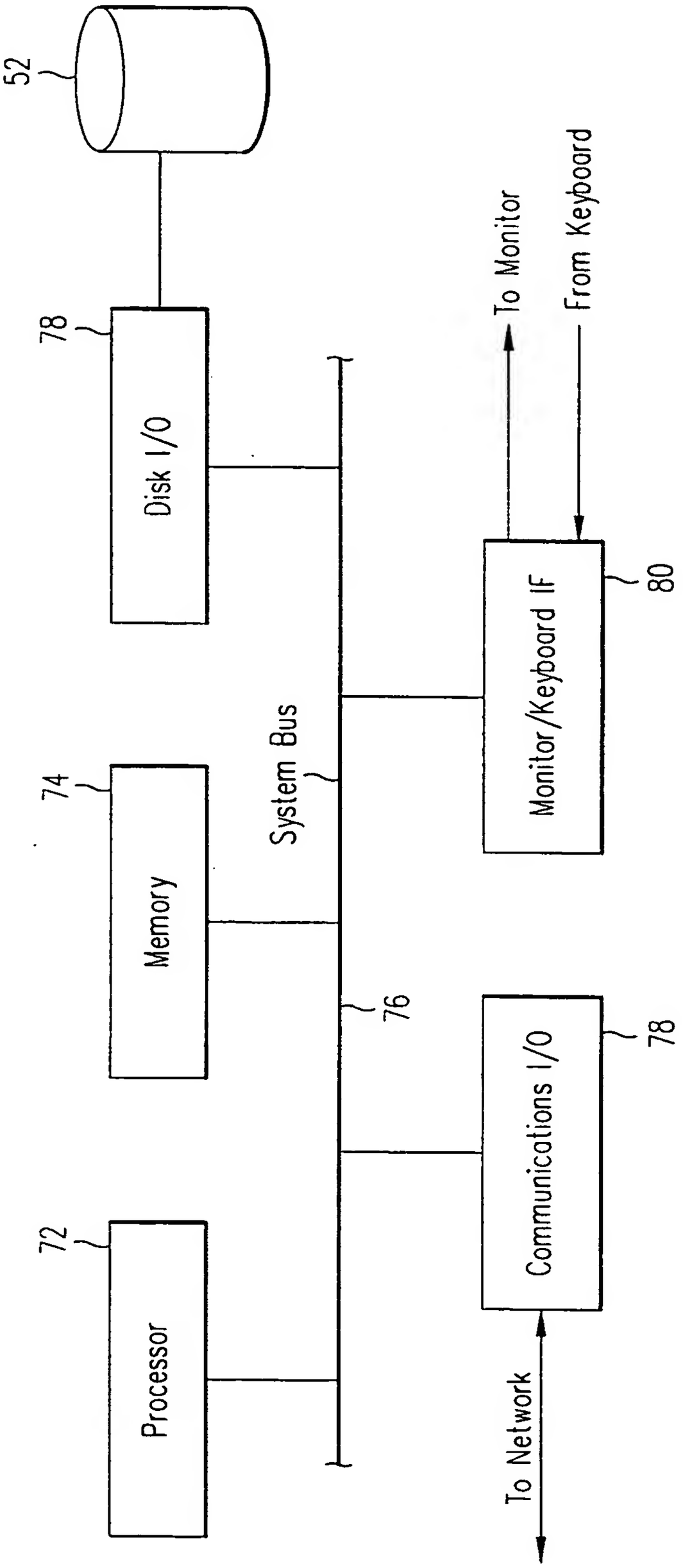
52
78
Disk I/O
System Bus
74
Memory
76
72
Processor
Monitor/Keyboard IF
80
To Monitor
From Keyboard
Communications I/O
78
Communications
To Network
70

FIG. 2

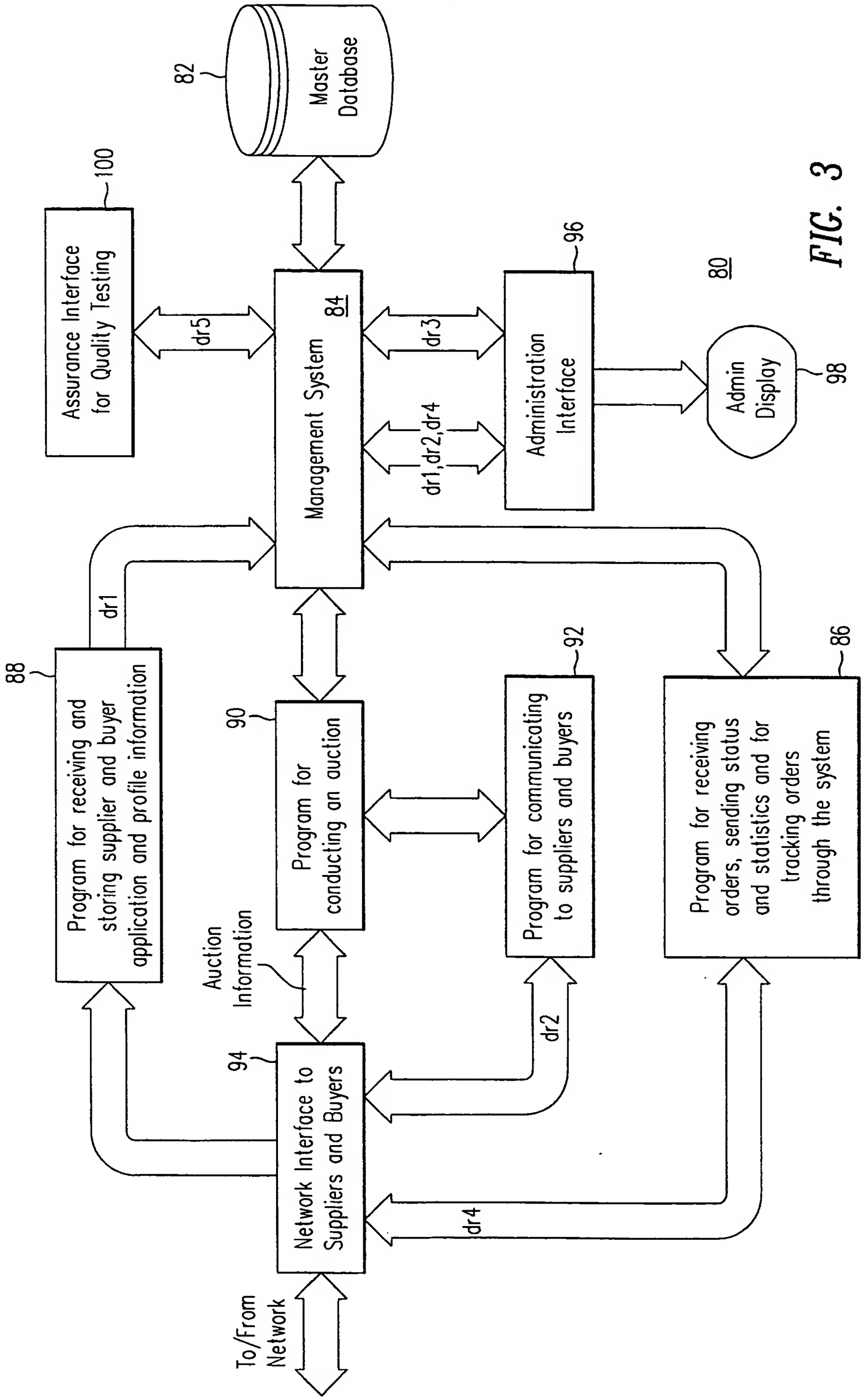
82
Master Database
100
Assurance Interface for Quality Testing
dr5
84
Management System
dr3
96
Administration Interface
80
Admin Display
98
dr1,dr2,dr4
88
Program for receiving and storing supplier and buyer application and profile information
dr1
90
Program for conducting an auction
Auction Information
92
Program for communicating to suppliers and buyers
86
Program for receiving orders, sending status and statistics and for tracking orders through the system
dr2
94
Network Interface to Suppliers and Buyers
dr4
To/From Network

FIG. 3

dr1-application information

- supplier application information
  - name
  - contact information
  - profile information
- buyer application information
  - name
  - contact information
  - profile information
  - payment information
  - shipment information

dr2-interactive auction data

- bid confirmation
- lower bid notice
- supplier bid
  - price
  - quantity
  - condition of product
    - working
    - defective
    - used

dr3-administrative information

- target price (max price at which procurement system willing to buy item, based on mark-up)
- auction close time and date
- drop ship requirement
- priority one
- special and generic product requirements
- quantity
- partial quantity acceptance
- information about suppliers and buyers
- number of certified suppliers
- number of non-certified suppliers
- metrics and statistics
- control limits
- order status
- product status
- record of supplier's profile
- supplier is approved to bid
- changes to supplier's status
- supplier able to bid
- supplier certified by commodity
- buyer credit limit
- buyer payment method
- buyer credit information
- fee percentage (mark-up)
- fee structure indicator
  - (buyer maximum price-marked-up actual price) to buyer
  - (buyer maximum price-morked-up actual price) kept

FIG. 4A

dr4–buyer order information

- statistics and metrics
- order (submitted by buyer)
  - product and product description
  - quantity
  - maximum price (buyer is willing to pay)
  - auction length/close time
  - priority
  - certified suppliers
  - buyer part number
  - partials allowed
  - auction specifications/notes
  - ship–to address
  - ship carrier
  - ship account number
  - assign requisition number
  - P.O. Number
  - P.O. line number
- notice to buyer of auction results and buyer actions needed
  - repost
  - cancel
  - number supplied
  - number not supplied
  - number canceled
- order status
  - information about items supplied
  - information about items not supplied
  - information about items canceled
  - information about items shipped
  - location of order in procurement system
- return number request for defective or warranty goods by procurement administration
- confirmation of buyer registration

dr4–supplier information

- statistics and metrics
- win notice and notice of supplier's action needed
- waybill number
- serial numbers
- ship date
- purchase order
- packing slip
- notification of defective goods and request return number for same
- confirmation of supplier registration

dr5–assurer information

- order status
- product specifications
- receiving information (pre–book number)
- partials allowed
- shipping information
- assurer order number (for internal tracking)
- failure information (if product fails assurer testing)
  - items that failed

FIG. 4B

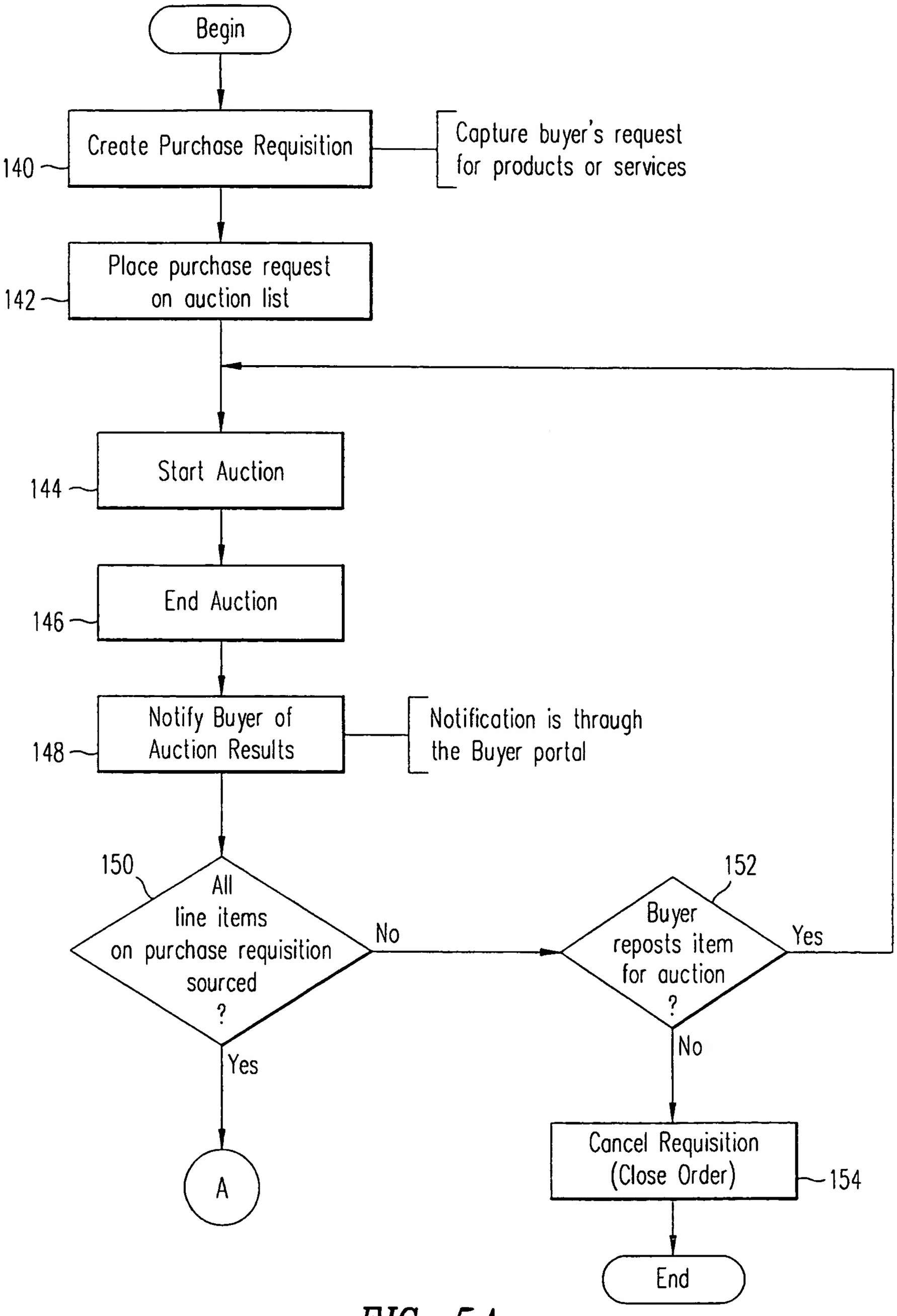
Begin
Create Purchase Requisition
140
Capture buyer's request for products or services
Place purchase request on auction list
142
Start Auction
144
End Auction
146
Notify Buyer of Auction Results
148
Notification is through the Buyer portal
150
All line items on purchase requisition sourced ?
No
Yes
A
152
Buyer reposts item for auction ?
Yes
No
Cancel Requisition (Close Order)
154
End

FIG. 5A

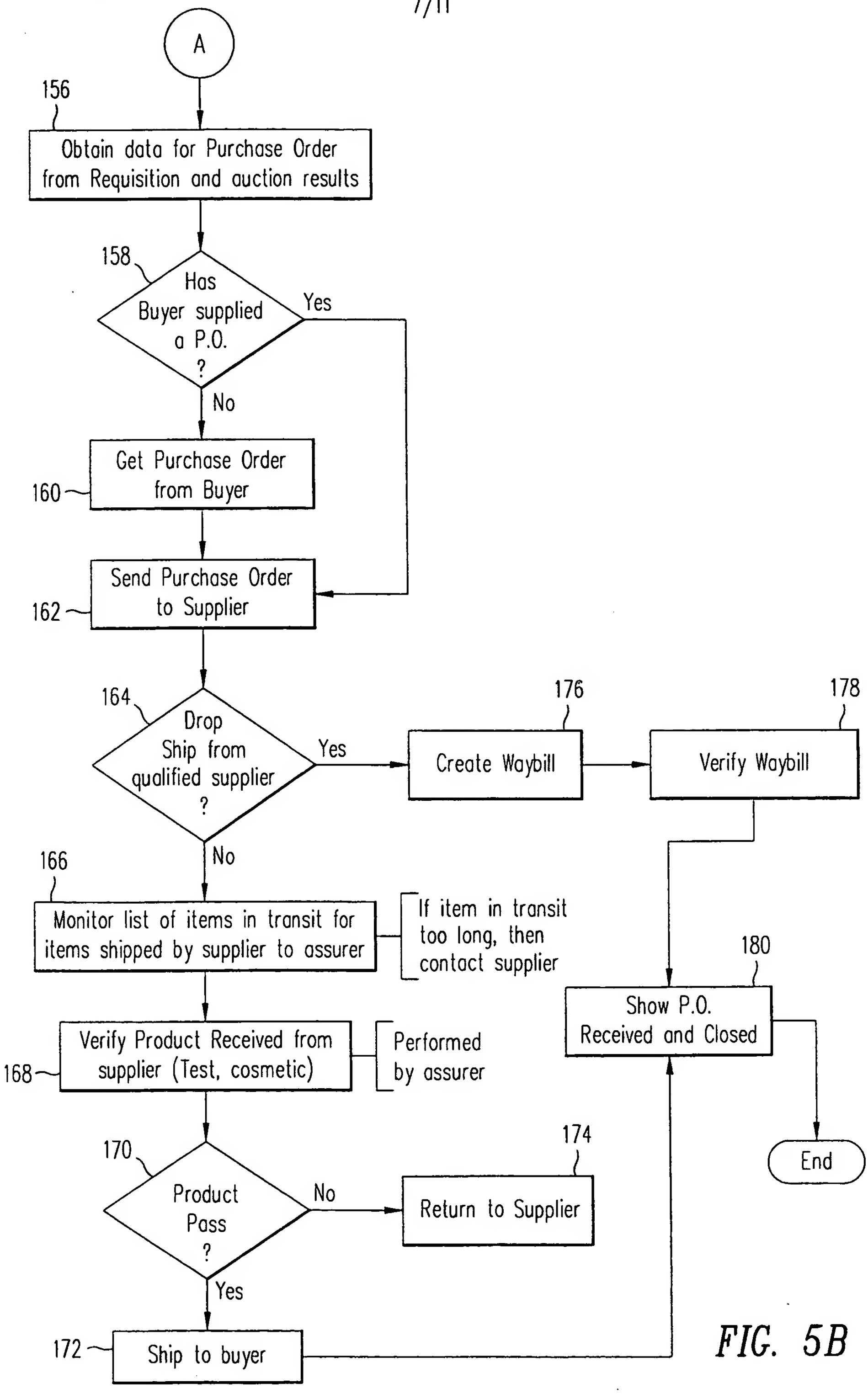
A
156
Obtain data for Purchase Order from Requisition and auction results
158
Has Buyer supplied a P.O. ?
Yes
No
160
Get Purchase Order from Buyer
162
Send Purchase Order to Supplier
164
Drop Ship from qualified supplier ?
Yes
No
176
Create Waybill
178
Verify Waybill
166
Monitor list of items in transit for items shipped by supplier to assurer
If item in transit too long, then contact supplier
180
Show P.O. Received and Closed
End
168
Verify Product Received from supplier (Test, cosmetic)
Performed by assurer
170
Product Pass ?
No
Yes
174
Return to Supplier
172
Ship to buyer

FIG. 5B

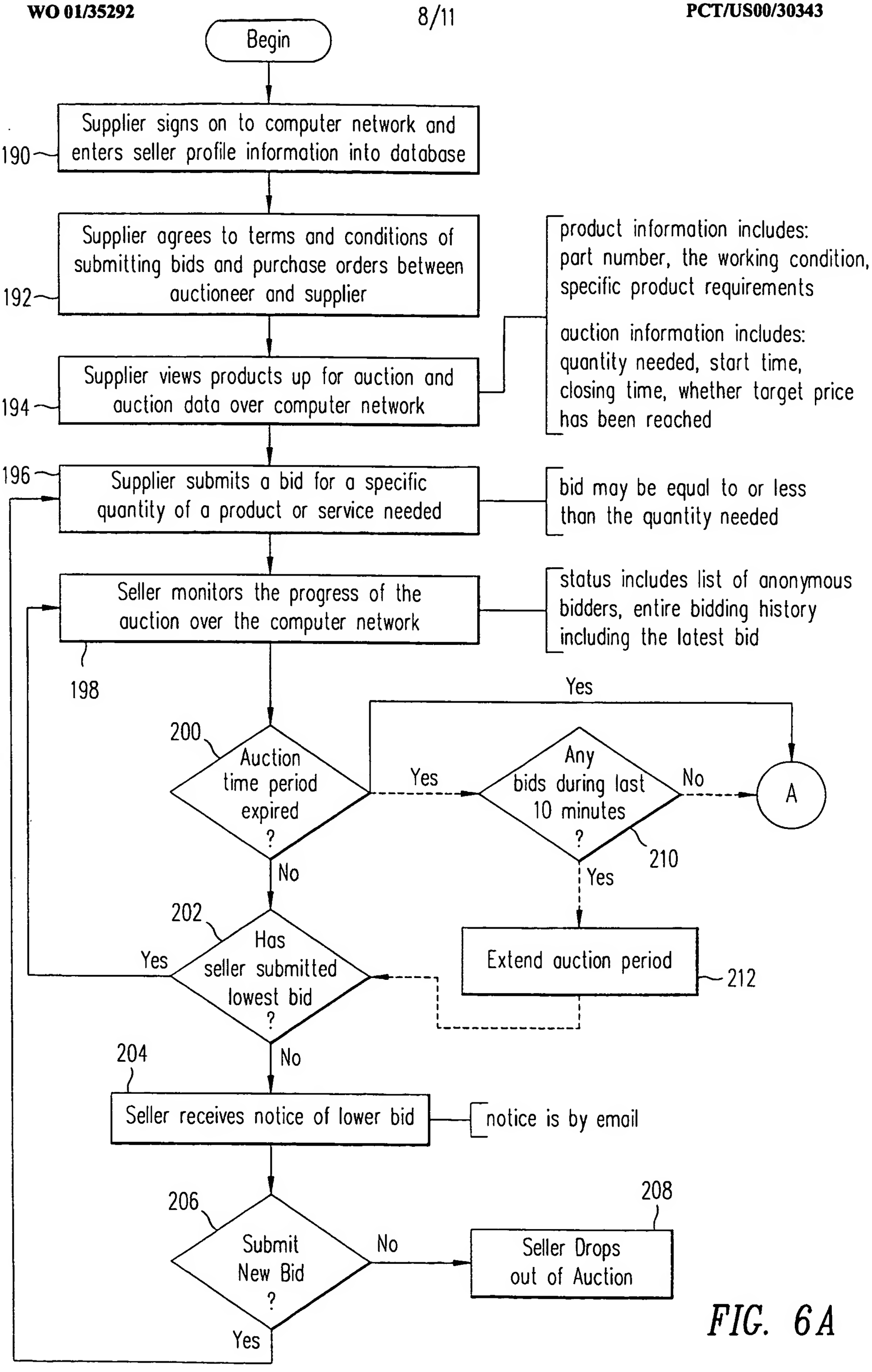
Begin
190
Supplier signs on to computer network and enters seller profile information into database
192
Supplier agrees to terms and conditions of submitting bids and purchase orders between auctioneer and supplier
194
Supplier views products up for auction and auction data over computer network
product information includes: part number, the working condition, specific product requirements
auction information includes: quantity needed, start time, closing time, whether target price has been reached
196
Supplier submits a bid for a specific quantity of a product or service needed
bid may be equal to or less than the quantity needed
Seller monitors the progress of the auction over the computer network
198
status includes list of anonymous bidders, entire bidding history including the latest bid
200
Auction time period expired ?
Yes
Any bids during last 10 minutes ?
210
No
A
Yes
No
202
Has seller submitted lowest bid ?
Yes
Extend auction period
212
No
204
Seller receives notice of lower bid
notice is by email
206
Submit New Bid ?
No
208
Seller Drops out of Auction
Yes

FIG. 6A

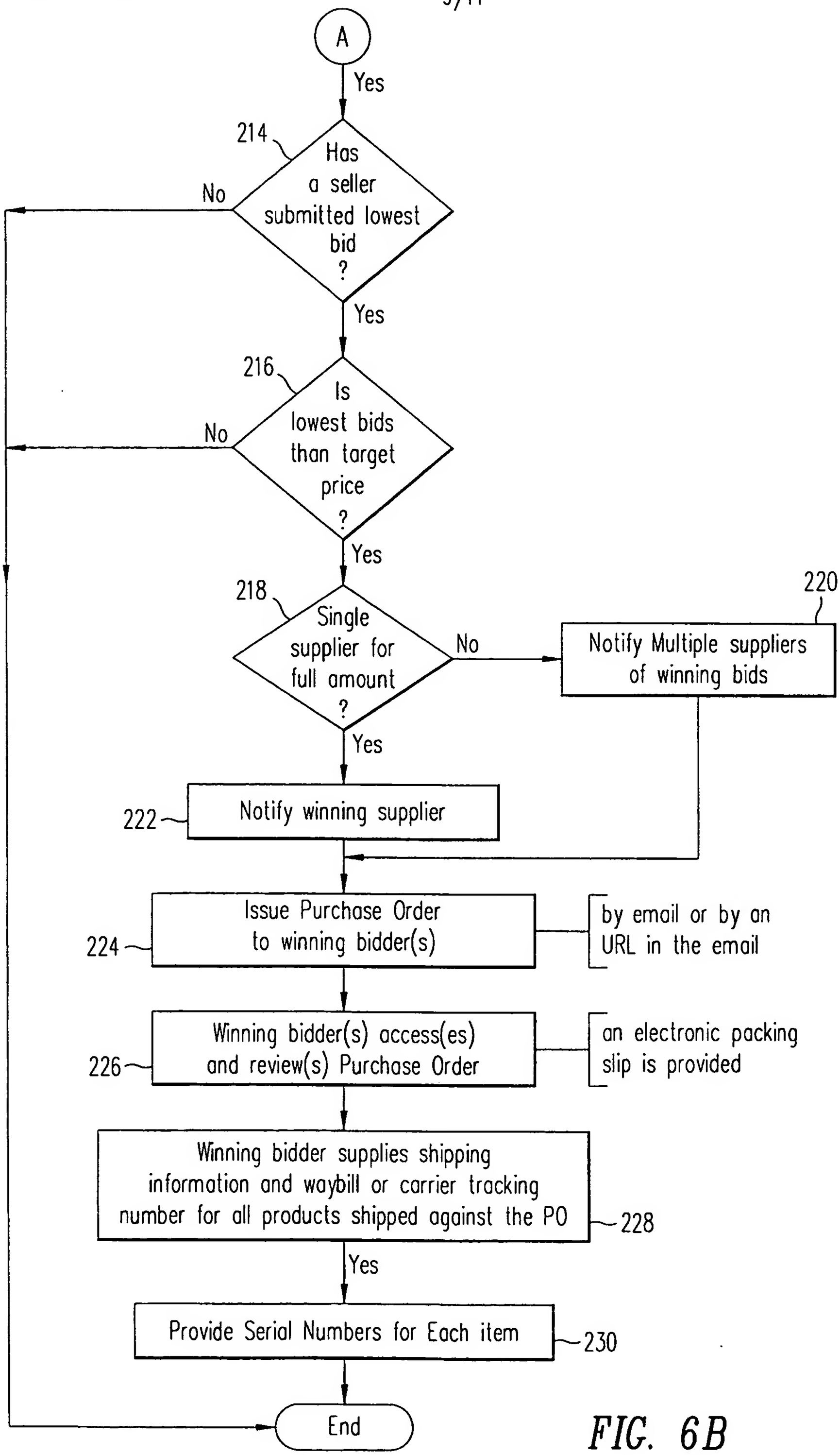
A
Yes
214
Has a seller submitted lowest bid ?
No
Yes
216
Is lowest bids than target price ?
No
Yes
218
Single supplier for full amount ?
No
220
Notify Multiple suppliers of winning bids
Yes
222
Notify winning supplier
224
Issue Purchase Order to winning bidder(s)
by email or by an URL in the email
226
Winning bidder(s) access(es) and review(s) Purchase Order
an electronic packing slip is provided
Winning bidder supplies shipping information and waybill or carrier tracking number for all products shipped against the PO
228
Yes
Provide Serial Numbers for Each item
230
End

FIG. 6B

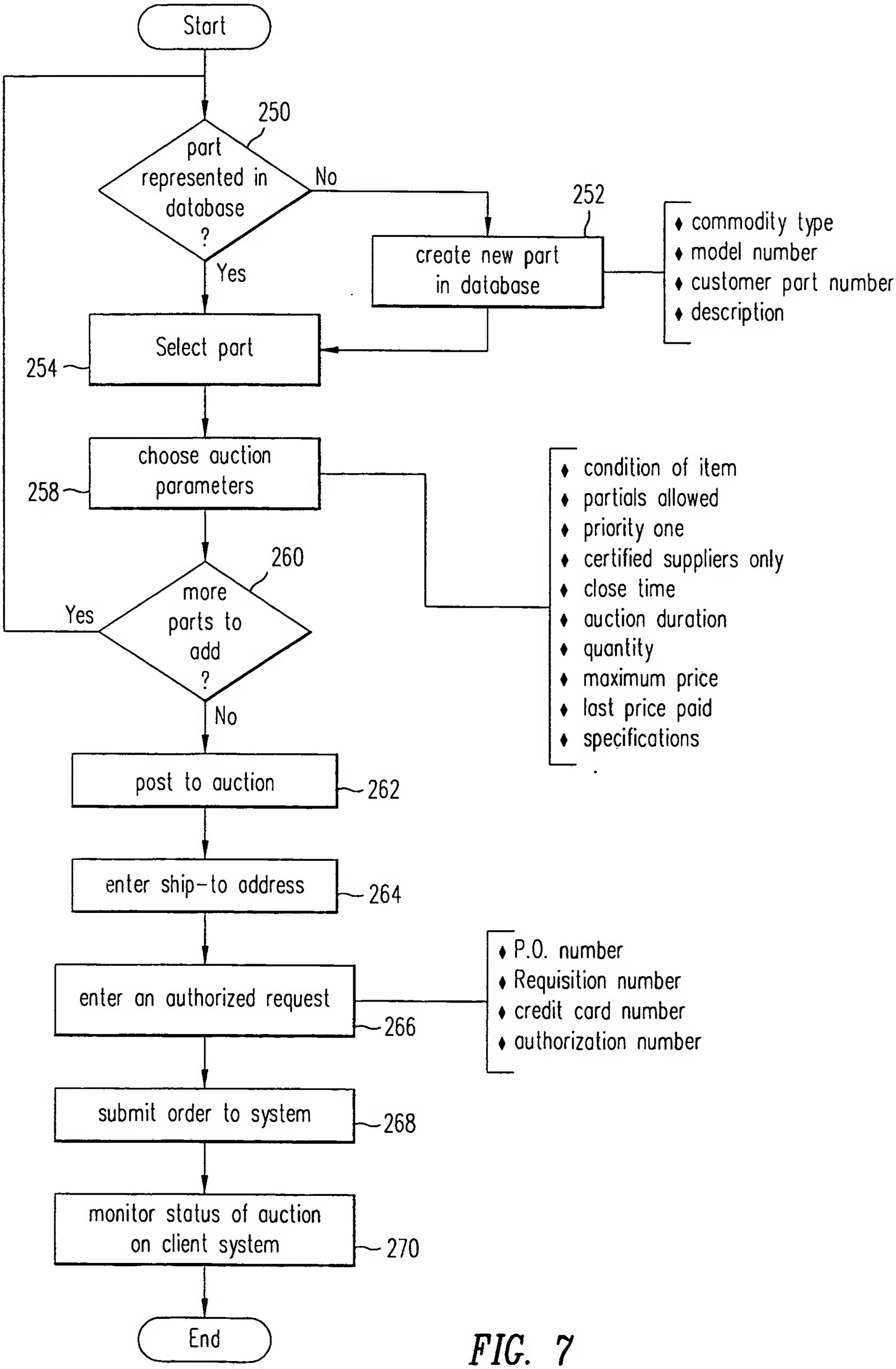
Start
250
part represented in database ?
No
Yes
252
create new part in database
♦ commodity type
♦ model number
♦ customer part number
♦ description
Select part
254
choose auction parameters
258
♦ condition of item
♦ partials allowed
♦ priority one
♦ certified suppliers only
♦ close time
♦ auction duration
♦ quantity
♦ maximum price
♦ last price paid
♦ specifications
260
more parts to add ?
Yes
No
post to auction
262
enter ship-to address
264
enter an authorized request
266
♦ P.O. number
♦ Requisition number
♦ credit card number
♦ authorization number
submit order to system
268
monitor status of auction on client system
270
End

FIG. 7

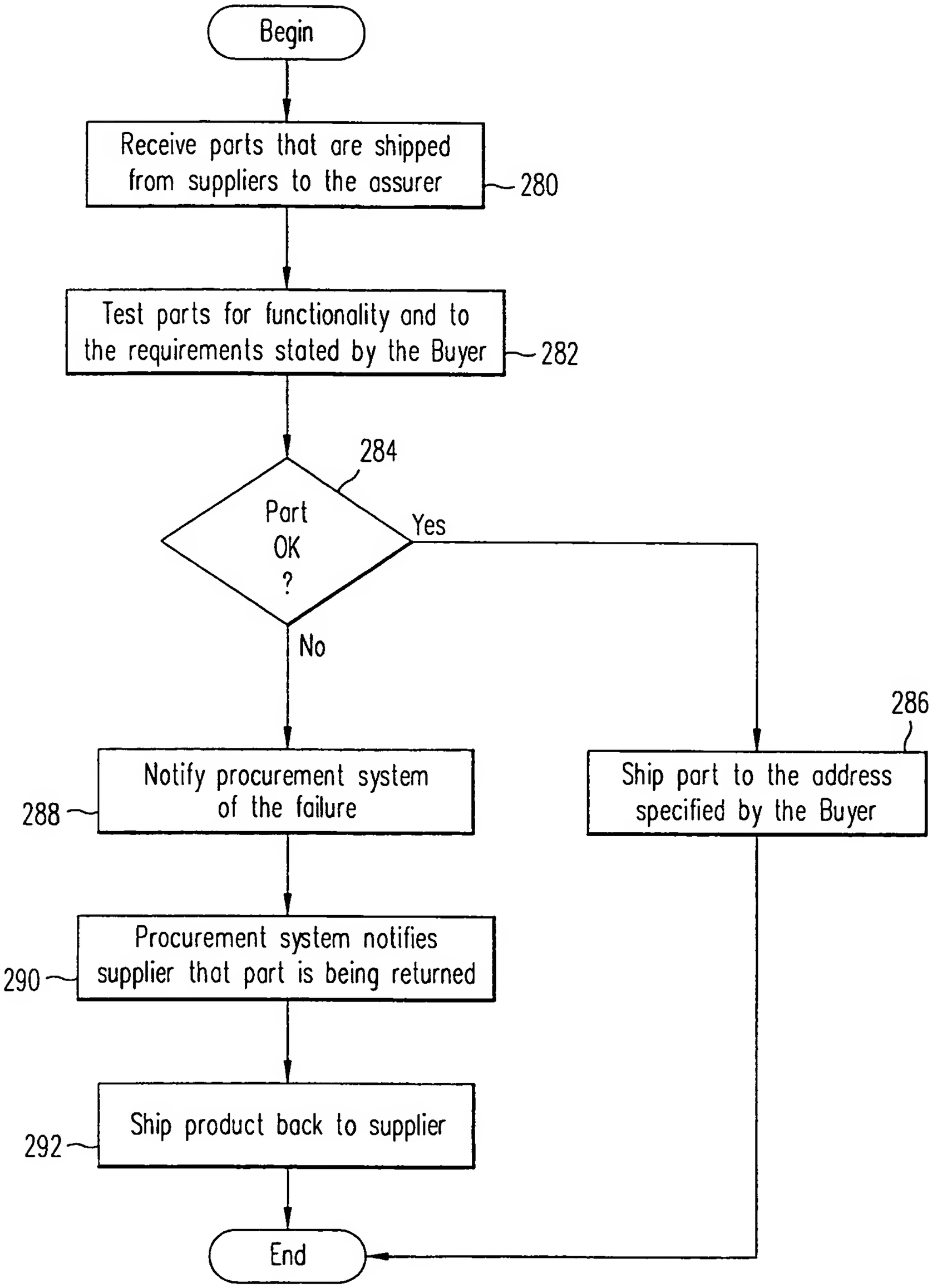
Begin
Receive parts that are shipped from suppliers to the assurer
280
Test parts for functionality and to the requirements stated by the Buyer
282
284
Part OK ?
Yes
No
286
Ship part to the address specified by the Buyer
288
Notify procurement system of the failure
290
Procurement system notifies supplier that part is being returned
292
Ship product back to supplier
End

FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/30343

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :GO6F 17/60
US CL :705/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/1, 35-40; 707/100-104

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,835,896 A (FISHER ET AL.) 10 NOVEMBER 1998, SEE COLUMN 4, LINE 30 TO COLUMN 5, LINE 28.	1-27
A	US 5,826,244 A (HUBERMAN) 20 OCTOBER 1998, SEE COLUMN 3, LINE 40 TO COLUMN 5, LINE 34.	1-27
A	"GOING...GONE", PC Week, V13, N34, pE01(02), 26 AUGUST, 1996, (DIALOG FILE 275, ACCESSION No. 01977749), SEE ENTIRE DOCUMENT.	1-27
A	LITTLE, BOB, "AUCTIONING IS THE WISEST CHOICE IF YOU WANT BEST VALUE..", GOVERNMENT COMPUTER NEWS, V15, N28, P54(2), 04 NOVEMBER 1996, DIALOG FILE 148, ACCESSION NO. 09137259.	1-27

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search	Date of mailing of the international search report
14 MARCH 2001	27 APR 2001
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer FRANTZY POINVIL James R. Matthews Telephone No. (703) 305-9779